# Urban Travel in Japan: Commemorating Favorite Places

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## Travel Crush

One of most exciting things about traveling, especially in such large cities as Tokyo or Osaka, is finding your special places. It's like an instant crush; you find yourself somewhere new, and suddenly you feel happy, curious, and vital. Maybe you fall for a traditional Japanese teahouse near your hotel. Maybe you lose yourself in a stroll through the cherry blossom trees at an urban park. Maybe you're captivated by a part of town—a historic district, an arts district, or a local street market—that feels like it's YOUR neighborhood, if only for a few days.

When it's time to go home, you want to maintain your connection to these places with a unique souvenir. A cheap key ring or mug isn't going to do it for you, but you can't really afford a silk kimono. How do you take your favorite places home with you?

**TBOX** has the answer: customized, limited-edition t-shirts designed by local artists.

## Keep the Love Alive with TBOX

**TBOX** sells high quality, print-on-demand t-shirts via bright orange vending machine-style kiosks located throughout Japan's major cities. Each **TBOX** machine features a rotating selection of designs specific to the immediate area and designed by local artists. No two **TBOX** machines sell the same shirts.

The t-shirt designs aim to capture the essence of each city's various districts and attractions, whether it's the vibrant pop culture in Tokyo or an ancient shrine in Kyoto.

**TBOX** was created to provide:
- **Travelers** with a personalized way to commemorate the cities they love.
- **Local artists** with a way to showcase their designs.

**TBOX** is not simply a vending machine that dispenses t-shirts; it's an attraction in itself that provides customers a high and satisfying level of interaction.

Shoppers can select a design and a shirt style, then watch the shirt being printed, dried, and dispensed.

# How TBOX Began
## Secondary Research: Japan as Vending Leader

When tasked with creating a vending machine in a non-English speaking country, we knew we wanted to locate our product in a vibrant urban area. With Tokyo in mind, we settled on Japan fairly quickly. Here's why:

- **Established Vending Culture.** Our literature review showed that Japan has a long history of vending machine use and the highest density of vending machines in the world. (There are at least five million vending machines in Japan, or approximately 1 vending machine for every 23 people).[1]

- **Transit Stations are the Gateways to Japanese cities.** Japan has a good transit system that citizens and tourists use to travel within cities and around the country. Tokyo has the eight best metro system in the world, supporting an estimated 14 billion passengers a year.[2]

- **Walking Culture.** Everyone walks in Japan, so when we combine this information  with ridership data, we see that there is high foot traffic to and from transit areas, providing optimal locations in which to place  our vending machines.[3]

- **Vandalism-Free Streets.** It's important to note that Japan's cities provide a unique vending environment. Overall, Japan's cities are safe, and historically, vending machine companies have not had problems with vandalism.

  - The Economist's Safe Cities Index of 2017 ranked Tokyo and Osaka first and third, respectively, for safety. [4] Knowing that the machines will fit into a segment of accepted shopping culture, and will not be at risk of vandalism, gave us the confidence to move forward with our ideas with one less concern around machine maintenance.

- **Needs Within Current System.** Our research revealed a problem we wanted to solve. The primary customer for vending machines in Japan are middle-aged men.[5] Japanese vending company leaders would like to change that. Their primary needs for expanding vending shopping in Japan are are:
    - Attracting millennials and tourists to vending shopping,
    - Integrating smartphone use with vending shopping.[6]

Guided by this data, we set out to leverage and enliven vending machine shopping in Japan. We wanted to design a vending machine that offers young shoppers and travelers stylish, high-quality commemorative products, as well as an engaging, interactive shopping experience that might attract new vending shoppers.

## TBOX Merch: Why T-Shirts

We decided on custom t-shirts because we wanted to offer a stylish product that would adequately commemorate specific areas of Japan's favorite cities, stand out from other t-shirt offerings,  and appeal to shoppers who see themselves as appreciating all that is urban and artsy. T-shirts are also very easy to pack for the journey home.

We will involve local art and design students in creating the t-shirt designs. Students can enter a contest to have their work considered. Each month a new artist's designs are featured on four shirts. We think that the contest highlights and supports up-and-coming artists, and, in doing so, also creates excitement in the community.

Building on the contest idea, each **TBOX** vending machine will sell different designs, specific to its location/neighborhood, in limited numbers, for a limited time, creating urgency around purchasing **TBOX** shirts and a cachet in owning one.

### Examples

The shirts on the following page are an example of what **TBOX** might offer, four new designs a month, created by a local artist.[7] Perhaps these shirts were inspired by a neighborhood populated with young tech workers who enjoy the area's bars, restaurants and manga cafes. The second set of t-shirts, borrowed from t-shirt retailer sites and search result images (unattributed), show examples of how local artists might interpret and design cultural symbols, nature, anime, and pop-inspired icons and art.

*(**Note**: These images  are used as placeholders for academic purposes only.)*

# Our Customers

## Where the Tourists Are From

With our target market defined for us, young shoppers and tourists, we consulted the Japanese Tourism Research and Consulting Company's website.[8] The visualization below gives us a picture of who visited Japan so far in 2017.

### Asia

This graph tells a quick story about who sends the largest numbers of travelers to Japan: China, Korea, and Taiwan.

### Asia and US

After that the numbers drop off significantly to the group of countries sending the second largest number of tourists, Hong Kong, the United States, and Thailand.

### Asia and Europe

The third tourist group represents another drop off in numbers, although not as significant as the gap between the first and second tourist groups. This group is includes the Philippines, Australia, Malaysia, the United Kingdom, Vietnam, Singapore, France, Canada, and Indonesia. Finally, the fourth group shows a small decrease in overall numbers for Italy, India, Spain, and Russia. Considering the scope of this project, we did not include the fourth tourist group in our analysis. (For exact numbers of tourists per country, please see the Appendix.)
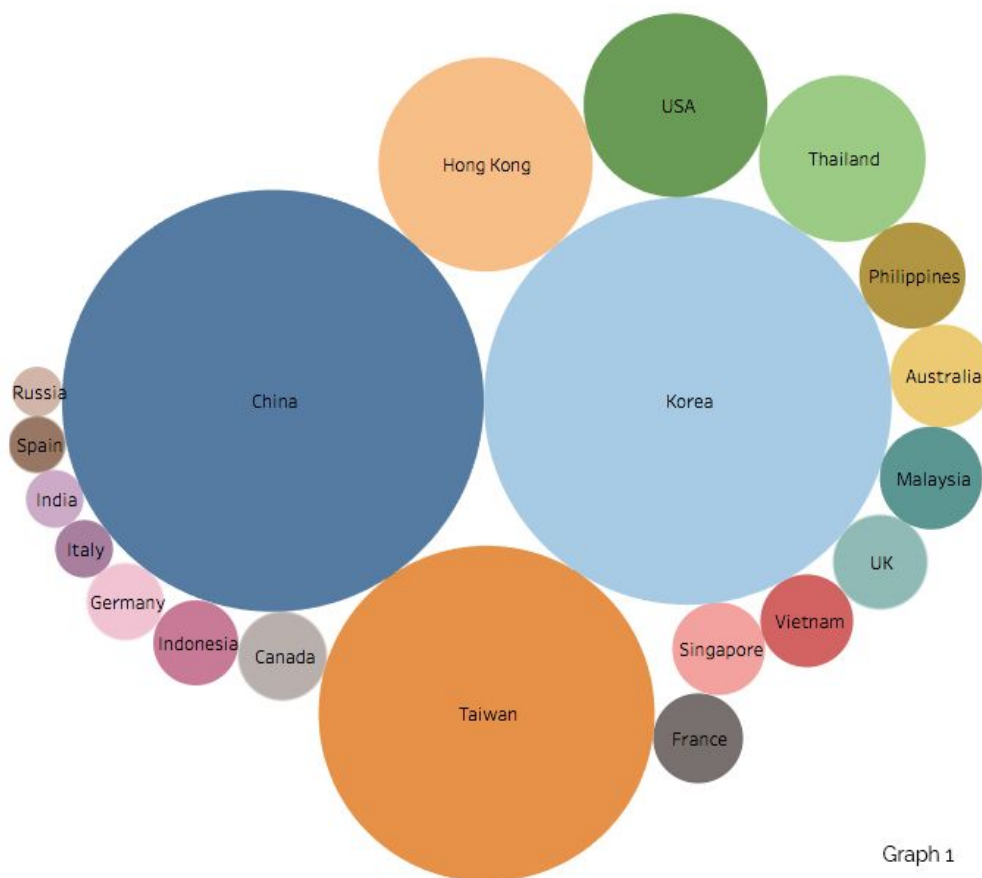
Graph 1

# Hofstede Insights

Next, we used the Country Comparison Graph on www.hofstede-insights.com to compare cultural models among the first tourist group countries and Japan. From this analysis we gained three key design insights.

## Uncertainty Avoidance and Long Term Orientation

All of these countries share with Japan a very high attachment to Long Term Orientation. We also see a trend of high Uncertainty Avoidance, excepting China, and similar mid-range Power Distances scores, again, excepting China, with its high Power Distance score. It's interesting to note that Japan has a much higher individualism score than the other countries, indicating that there may be an average level of tolerance for innovation.
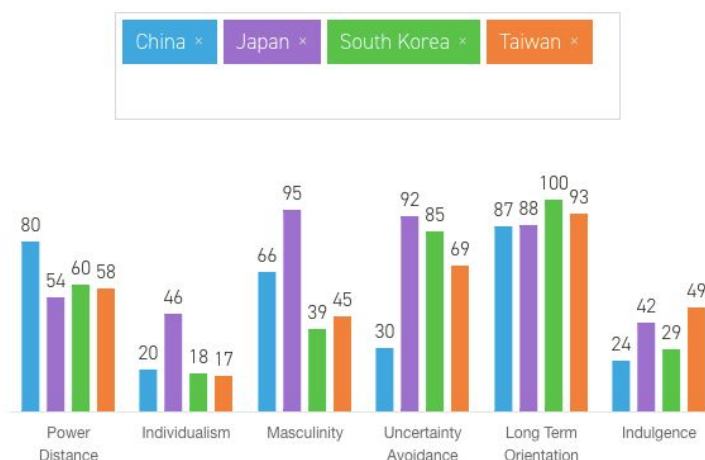
### Design Insight 1

These results led us to design a high-quality vending machine that will withstand weather and high use. We also used this information to consider two key areas where customers are likely to want reassurance: selecting the **right size** t-shirt and making a secure purchase using their **preferred payment method**. We believe these concerns will be universal among shoppers.

## Power Distance and Individualism

When we compared the second tourist group to Japan, we realized that it would be hard, if not impossible, to use all of Hofstede's models to gain useful cultural insights. The numbers were all over the map. The adage
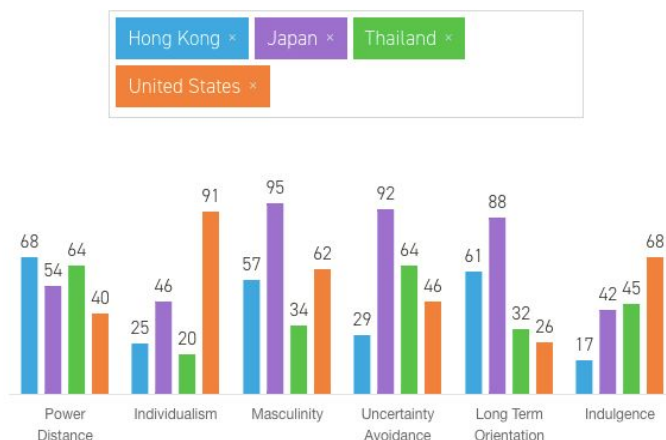
"when you try to please everyone, you please no-one" came to mind.

Still, we found one common model among this group: mid-range Power Distance scores. Comparing the two graphs, we saw that if we removed the United States, all of the other countries had mid-to-low scores for Individualism and Indulgence.

### Design Insight 2

We don't believe this comparison of scores is significant, but it could be used to make a case for keeping our t-shirts at a **price** well below what tourists might consider "luxury," as well as including a **range of t-shirt designs** from benign to edgy so that people from a variety of cultures can find a shirt that they will feel comfortable wearing.

## Power Distance and Indulgence

Finally, we looked at the comparison chart for the third tourist group and were surprised to see a few "across the board" trends: higher Indulgences scores, low- to mid-range Uncertainty Avoidance scores, and Long Term Orientation scores.
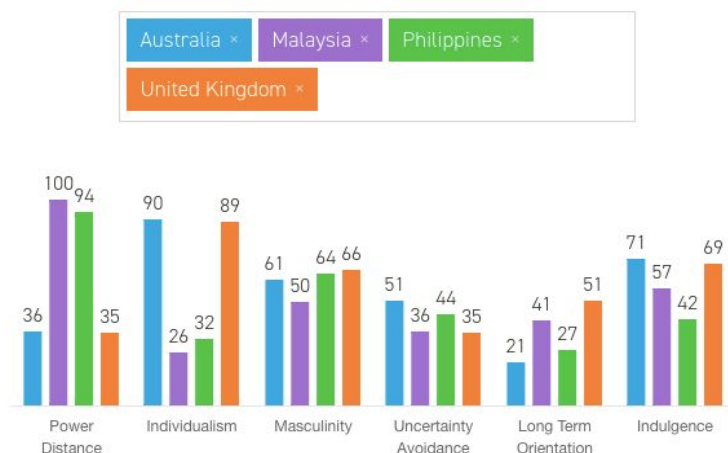


We noticed that Malaysia and the Philippines had the highest Power Distance scores of all the countries in the first three tourist groups. Unsurprisingly, the US and Australia had extremely high Individualism scores and the two Asian countries had very low Individualism scores.

### Design Insight 3

This chart showed us that we are actually switching around the typical globalization and localization strategies, as least in the physical sense. **TBOX** will be designed for Japan and localized for tourists visiting from other countries by addressing needs around: payment, tone of design, and price. The high Power Distance scores for Malaysia and the Philippines also made us revisit our ideas for the colors and designs used on the vending machine, as well as the shopping interface. We will **find a balance** between a busier composition for the box exterior and interface (to appeal to higher Power Distance tourists) with a less cluttered, **more streamlined UI** to

appeal to low Power Distance tourists. Higher indulgences scores in this group will also influence how we think about **price**.

# How TBOX Works

**TBOX** vending machines are both displays and mini self-service stores, containing sophisticated technology that drives  both the shopping interface and the t-shirt printing side of the box.

Below are the customer and artist user flows.

### Customer User Flow

1. Approach Machine:
2. Select design
3. Select t-shirt
4. Select size

5. Customize
6. Purchase (several pay options)
7. Watch shirt printing
8. Remove shirt from slot
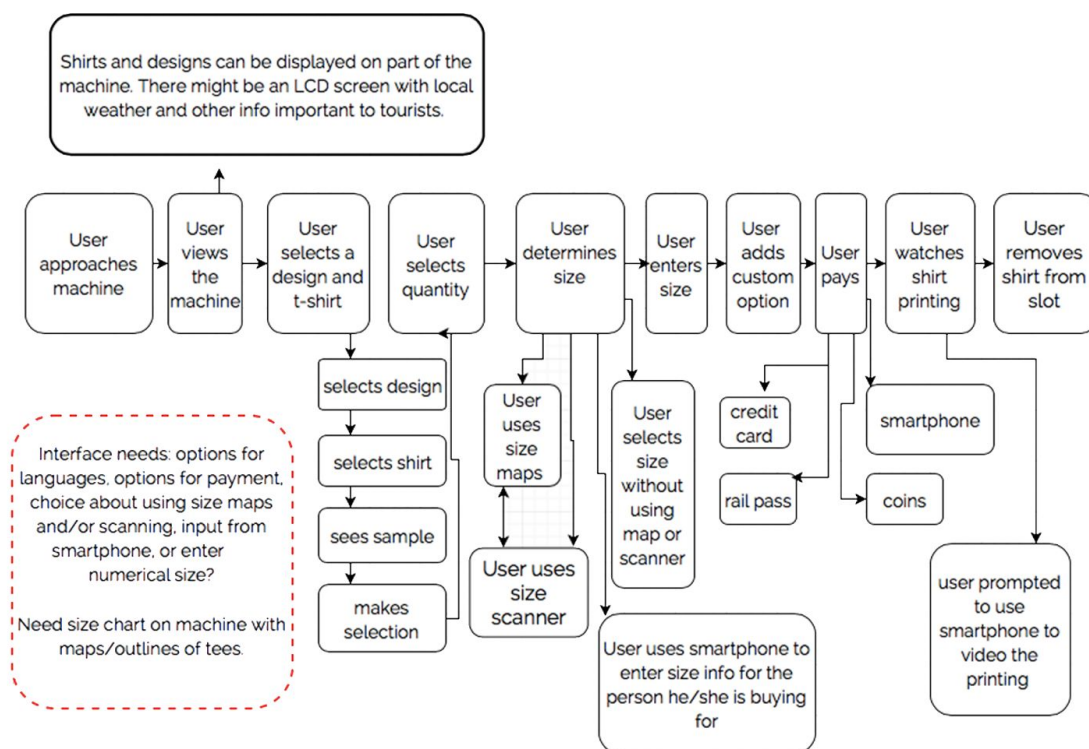
## Designer User Flow

1. Learn about the machine
2. Learn about the contest: via social media, via school, via the machine
3. Get more information: at the vending site or via website or app
4. Some designers will enter the contest without directly interacting with machine (e.g., via web or mobile app)
5. Some designers will enter get the contest info from the machine by entering contact information into machine to receive text or email, or scanning a QR code to access contest info via app or website.
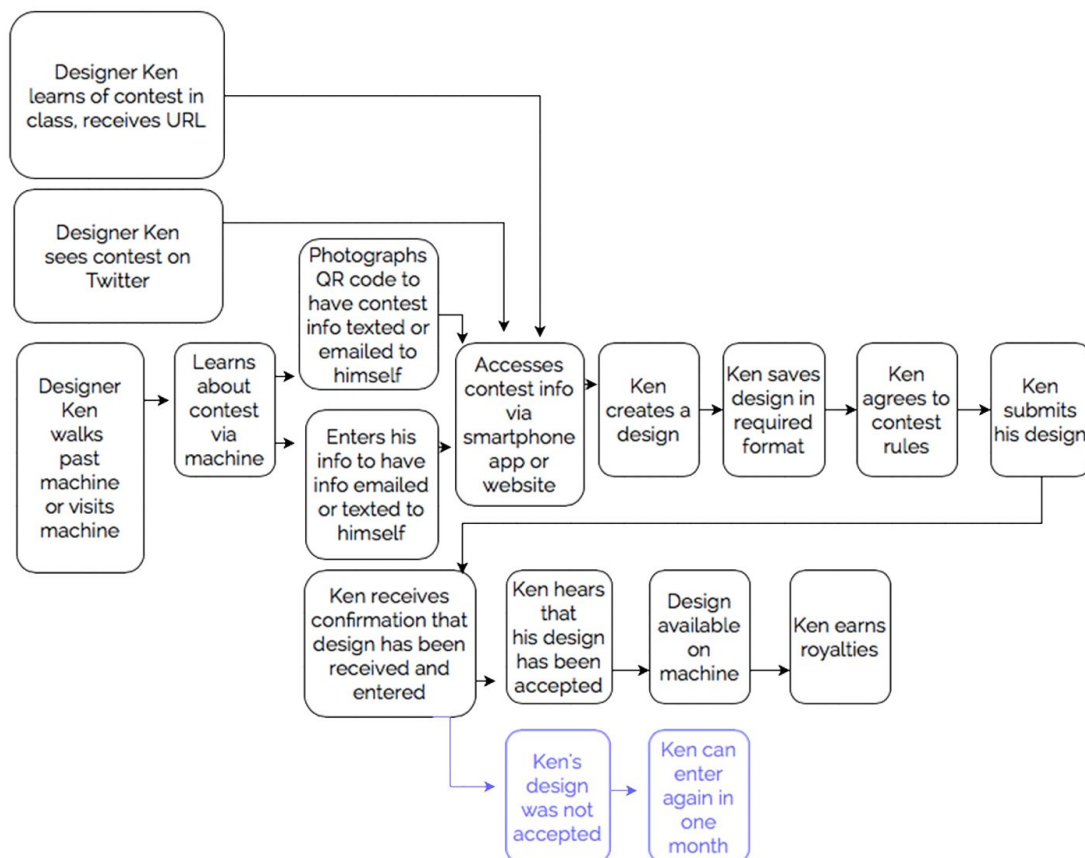
# Where to Find TBOX

To improve accessibility and visibility, with the goal of capturing foot traffic, we plan on locating  **TBOX** vending machines near transit stations throughout each of Japan's major cities. We will also place **TBOX** vending machines near art and design schools and major urban attractions. This distribution strategy allows us to populate Japanese cities with bright orange **TBOX** vending machines and to provide neighborhood-specific designs to customers.

Unlike the typical vending machine that one might find outside a shop, lined up against a train station wall, or wrapped around a kiosk in a shopping area, the **TBOX** will be placed on its own, like a pop-up shopping module, with room for customers to interact with the "shopping side" of the machine before circling around the box to watch their shirts be printed inside the glass encasement. Passersby will gather to watch this process, too. The size and "pop-up" style of the machine will lend itself well to the concept of scarcity (perhaps we need a vending machine on wheels): this is a limited edition shirt and perhaps, vending machine experience, too.

We envision tourists having time to embark from a train (or leave their lodgings), purchase a snack or beverage, then wander a bit before they encounter a **TBOX** while exploring  a new area of a city.

# Design Considerations
## TBOX Conformity and Visibility

With our cultural insights in mind, our primary design concern was creating a vending machine that will fit in with Japan's current vending landscape.

Vending machines are ubiquitous in Japan, are typically a boxy, rectangular shape, and come in a variety of bright colors. They have been part of the economy for decades. They provide convenience and a way to shop without having to interact with other people.[9] *(**Note**: Unless attributed, images on this page and the following  page are pulled from Google searches, for academic use only.)*



We want **TBOX** to fit into the current urban landscape. We will balance our design approach to fit a low Individualism score and a high Uncertainty Avoidance score.

At the same time, we want our vending machines to stand out. Having seen many unique vending machines in our

research, pictured below, we are confident we can find a balance of conformity and innovation.



Based on the above criteria, we created the exterior mockup of the vending machines in bright orange, with yellow and blue highlights. We have used text decoratively and, in the designer area, included "call outs" in a few languages, as a way to demonstrate that TBOX is for everyone. (Figure 1). According to Shutterstock.com, blue is a universally safe color, as is yellow. Orange has a variety of positive symbolic meanings in eastern countries.[10]



*Figure 1: Design Mockup*

With user testing, we may find that we will be guided by colors and box designs meaningful to each city when we design each locale-specific vending machine.

## TBOX  Size

**TBOX** vending machines will be twice, if not three times, the size of a typical vending machine in order to house the hardware and software that runs the machine, as well as the printing apparatus and product delivery mechanism.

The metal **TBOX** vending machine will be 10'w x 6't x 6' d; both of the 10"w x 6"t panels on each side of the box will be interactive. Half the box will be encased in glass to allow people to watch the shirts being printed.



*Figure 2: Design Mockup*
*(**Note for figures 1-4**: The t-shirt designs are referenced on page three, from footnote 7, The "Hand" and "Sun" icons are from flaticon.com. All are used as placeholder design elements, for academic purposes only.)*

## Interface Usability and Accessibility

With its print-while-you-wait attraction, the **TBOX** vending machine will provide a high level of interaction and entertainment.

The "business" side of the **TBOX** vending machine (Figure 2, above)  will have a window display of current designs and t-shirts, giving shoppers a chance to see the actual products and sizes (A), an interactive touchscreen used for purchases (B), a call-to-action area for designers, with contest information and links  (C), an LCD screen that displays weather and other information (D), and a large **TBOX** logo (E).

The "entertainment" side of the **TBOX** vending machine contains a printing machine, a drying rack, and an apparatus to fold the completed shirt and place it in some type of wrapping or packaging. (Figure 3)
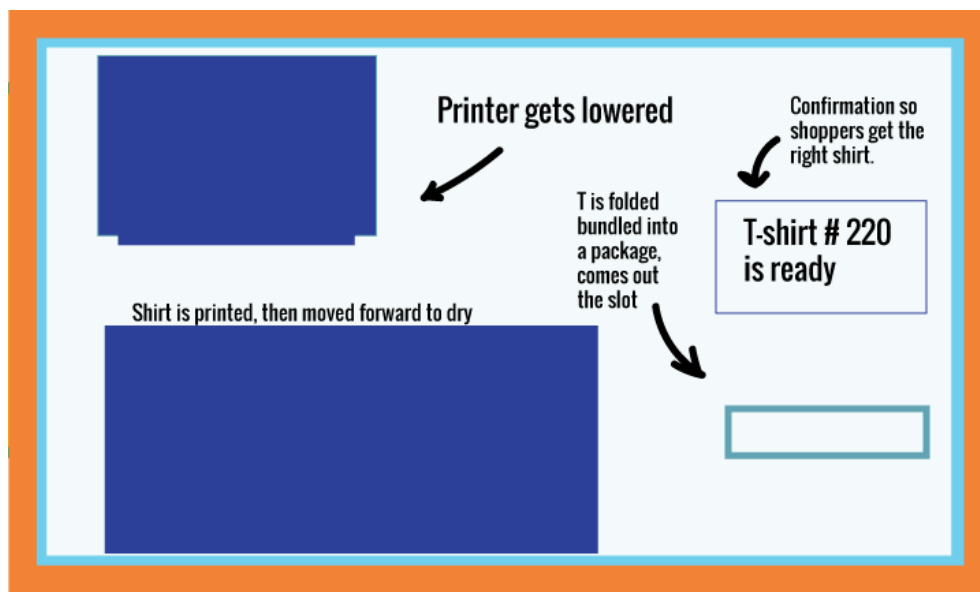


*Figure 3: Mockup showing printing side of TBOX*

### Intuitive with Cultural Localizations

In the shopping interface, we will strive to use text sparingly, and provide as many visual cues as possible to help users understand what is for sale and how to purchase it. Our ideal user interface would lead customers through a step-by-step process from start to finish. We hope that we can achieve a text-free, intuitive user experience, but if user testing tells us that more instructions are needed we will provide a way for users to select their preferred language. Even with a text-free shopping interface, we can provide a text option for users who need that (see upper right corner, Figure 5, below.).

These sample mockups could be used in the shopping interface. They are based on design patterns used in e-commerce websites to provide users with a familiar interactive purchase experience, and include a customer support button, language selector, and a "more information" button.

The user touches the screen to enter "the site," where the shirts for sale are displayed (see Figures 4 and 5).
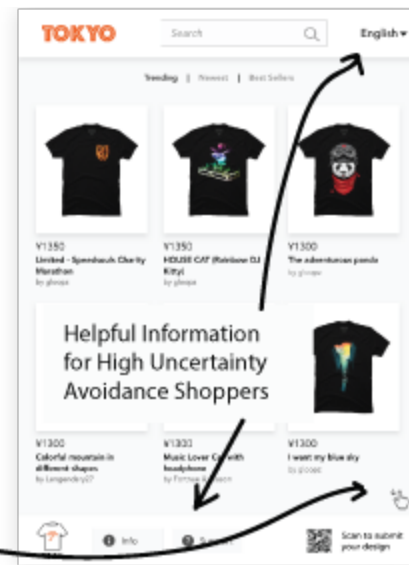
Figure 4: home screen



Figure 5: t-shirts

A user can select a shirt with a tap, which opens the item screen (Figure 6, next page). From there the user can tap to initiate purchase, which reveals an overlay with a confirmation overlay (Figure 7).  Tapping the orange "pay" button brings the user to the payment page (Figure 8), where she has the option of purchasing the item using her preferred payment method.
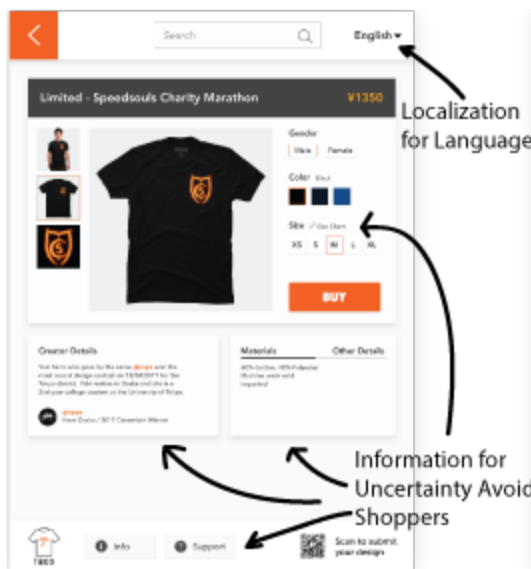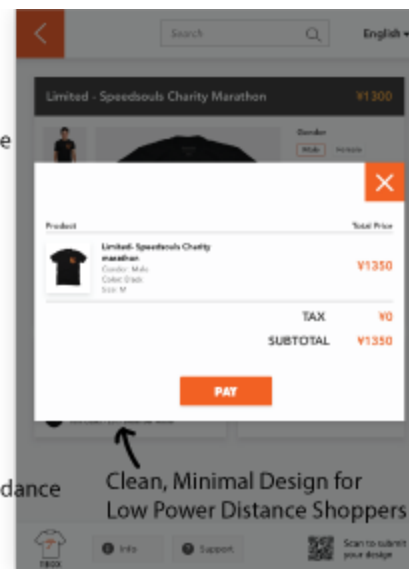


Figure 6: item page



Figure 7: confirmation

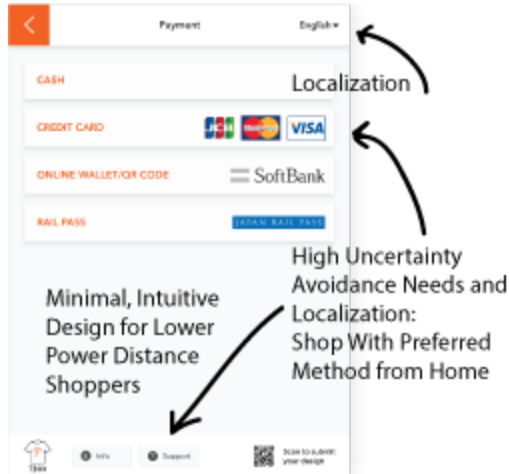Figure 8: Interface Mockup; payment options

**Location of Interactive Elements.** We will need to research the dimensions and placement of the shopping interface, as well as conduct user testing, to determine if the interactions are within reach of shoppers and ergonomically comfortable, allowing the customers to stand in one place during the transaction.
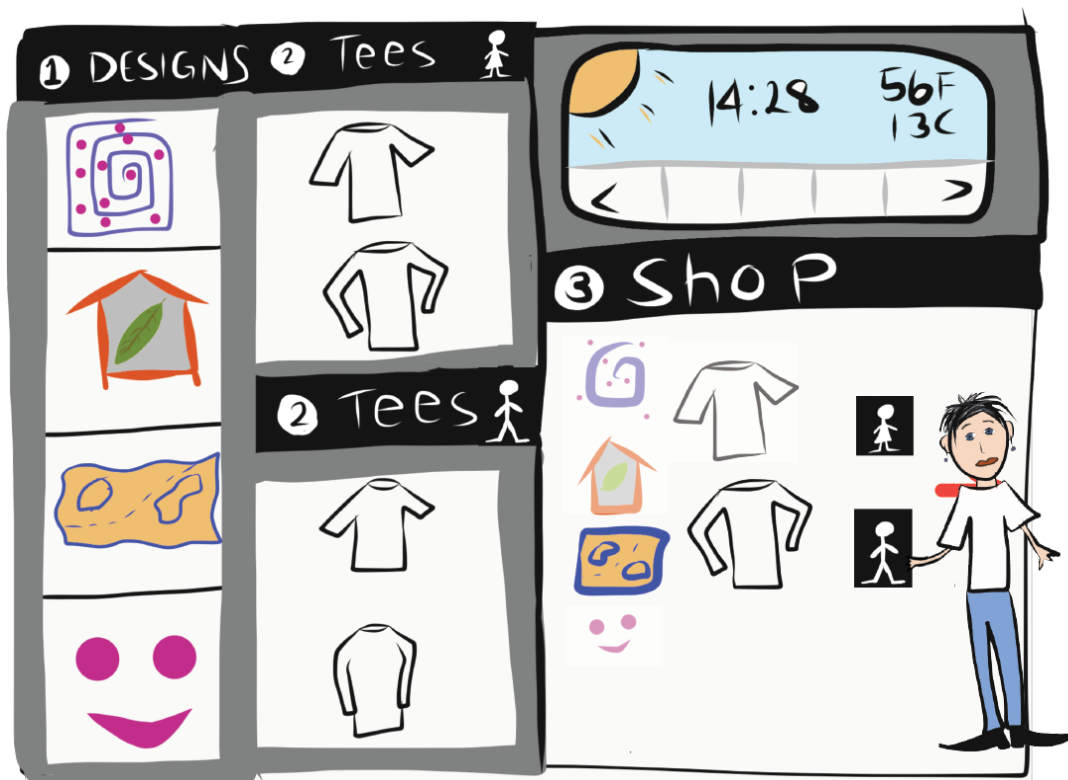


Figure 9: Mockup showing shopper using interface

**Get The Right Size**
**TBOX** will provide users with several ways to select a t-shirt that fits.

There will be men's and women's  t-shirts in the display window (with measurement overlays in inches and centimeters). With a tap on the screen, a user can see a size chart. We also plan to integrate QR codes that will allow users to download their sizes and measurements from personal garment fitting mobile phone apps. **TBOX** will also feature a body scanner for users who demand a perfect fit. This variety of size determination options allows people from more modest cultures to use the display shirts to gauge their sizes, while allowing tourists from more socially open cultures (and people who are risk-averse and/or tech fans) to use the body scanner.



*Figure 10: Interface with body scanner*

**Vending Payment Localization**
Since the bulk of tourists to Japan are from other Asian countries, it's important for us to match the digital trends in vending across Asia. Travelers from countries where vending machines contain sophisticated hardware and software that provides "touch and go" shopping experiences, interactive cameras, free WiFi, and a variety of payments methods will be more likely to use **TBOX** vending machines that provide familiar purchase options that match what Korean, Chinese, Taiwanese, and other Asian travelers are used to in their home countries. [11, 12]

Therefore, we will design **TBOX** to allow Japanese travelers to use coins and rail passes, Chinese travelers to use QR codes to make purchases via smartphones, and

North American tourists to use credit cards. With several payment methods available we can make all users feel comfortable using **TBOX** vending machines.

**Access for Additional Stakeholders**
QR codes and WiFi-equipped machines will also provide opportunities for other stakeholders, namely, the shirt designers, to interact with the machines All they have to do is capture the code on a smartphone to save the information for later. They can also access the **TBOX** website with their phones free via WiFi at the vending locations.

## Additional Design Considerations

While deep research into creating, powering, and maintaining a **TBOX** vending machine was out of scope, we have compiled a general list of design considerations and requirements.

1. **Power:** vending machines will need electricity to work; we will investigate both electric and solar power.
2. **Software and Hardware:** we will be able to use some existing tech for **TBOX**, but will need to conduct further research on how to create a reliable t-shirt printer that can work in the confines of the vending box. We will hope to leverage both smartphones and touchscreen technology in the purchase interface.
3. **WiFi:** each **TBOX** will be a WiFi beacon, allowing customers ease of use with their smartphones, as well as providing a small, "free WIFi" zone around the machines.
4. **Quality Control and Operations:** further research is required to determine how often the printer will need maintenance (e.g., new ink, mechanical adjustments), how many t-shirts the vending machines can hold, how often the boxes will need restocking.
5. **Customer Support:** there needs to be some type of customer support when the system breaks down or a shoppers gets stuck.

# Business Considerations: Data Collection

At its most basic, **TBOX** vending machines will be capable of collecting inventory, sales, and demographics data. Equipped with advanced technology

Below is a breakdown of the type of data and how it could be used to drive forecasting and product improvements. Although we grouped examples into high level categories, many of these data points could be used in conjunction with data elements from other categories. For example, customer purchase history may help inform sales trends or popular designs.

| Category | Example | Importance |
|---|---|---|
| Inventory | T-shirt | The system will track t-shirt size and style for each gender to determine the most popular shirts.<br>This data will be used to project stock and supply estimates for the next contest design winner. |
| Sales | Design | The system will track the rate of sales and the most popular sizes/styles.<br>This information will be used to forecast popularity, emerging trends, and length of "limited edition" periods |
| Variations | Price & Quantity | The system will track sales related to changes in prices, design, and t-shirt materials.<br>For instance, we may find that customers will prefer to pay for a higher quality t-shirt material even if the total price is 25% more expensive. |
| Customer | Purchase frequency & location | The system will track customer purchasing patterns to determine how likely a customer is to return to purchase t-shirts as new designs become available or if customers tend to purchase shirts only when visiting a new city. |
| Demographics | Customer location | The system will track customer demographics through credit card, smartphone, other purchase methods, vending cameras, social media.<br>This information will drive product selection. |

# Conclusion

**TBOX** is unique. It uses sophisticated technology to deliver a very analog product. In doing so it fits into the vast urban sea of Japan's vending machines while also transcending the vending experience by providing entertainment and delivering a meaningful product. **TBOX** highlights the best qualities of Japan's most visited cities, giving tourists from Japan and around the world a fashionable way to stay connected to their favorite places.

Our initial design decisions were primarily guided by our research of Japan's vending machine culture. We saw what was possible. With more research around vending business leaders' needs, we saw opportunity and found our target markets: young shoppers and tourists. Statistical research helped us identify that other Asian countries, particularly China, Taiwan, and Hong Kong, send the most tourists to Japan. With so many visitors coming from countries with their own vending cultures, we focussed on providing expected experiences around interaction and payment methods.

Finally, we were able to apply what we learned from this class, specifically, Hofstede's cultural models, which informed our design choices from the physical artifacts (e.g., t-shirt design tone, **TBOX** design and colors), to interaction UI (e.g., touch screen and payment method options), to visual design (e.g., color, use of graphics, etc.)

# Appendix

This chart shows the exact number of tourists who have visited Japan from each country in 2017.
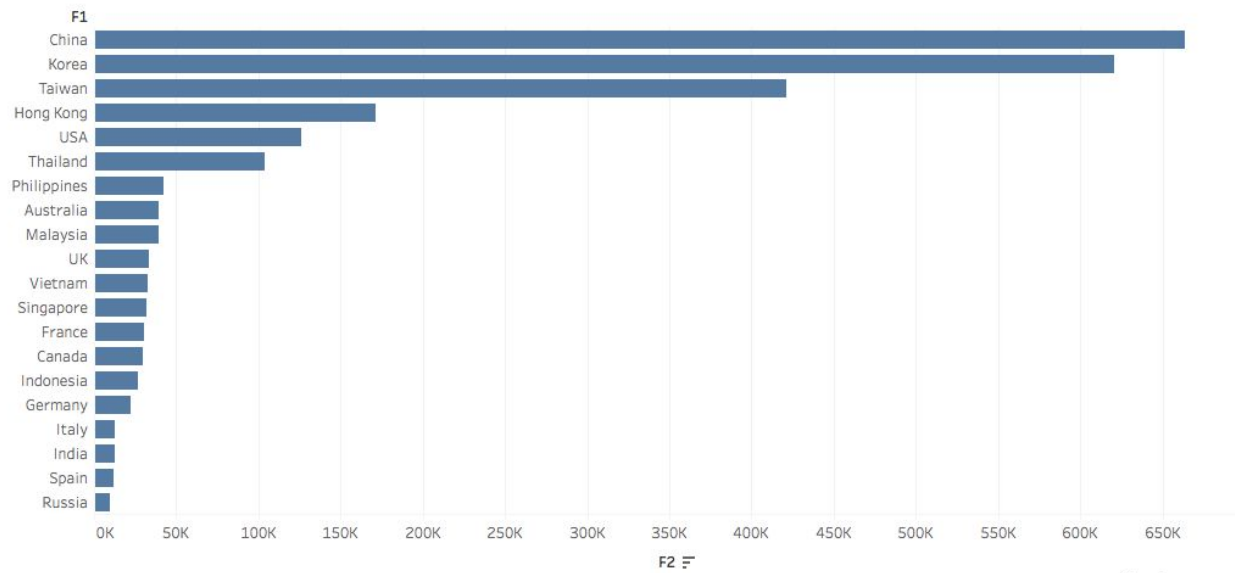


Graph 2

# Notes

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